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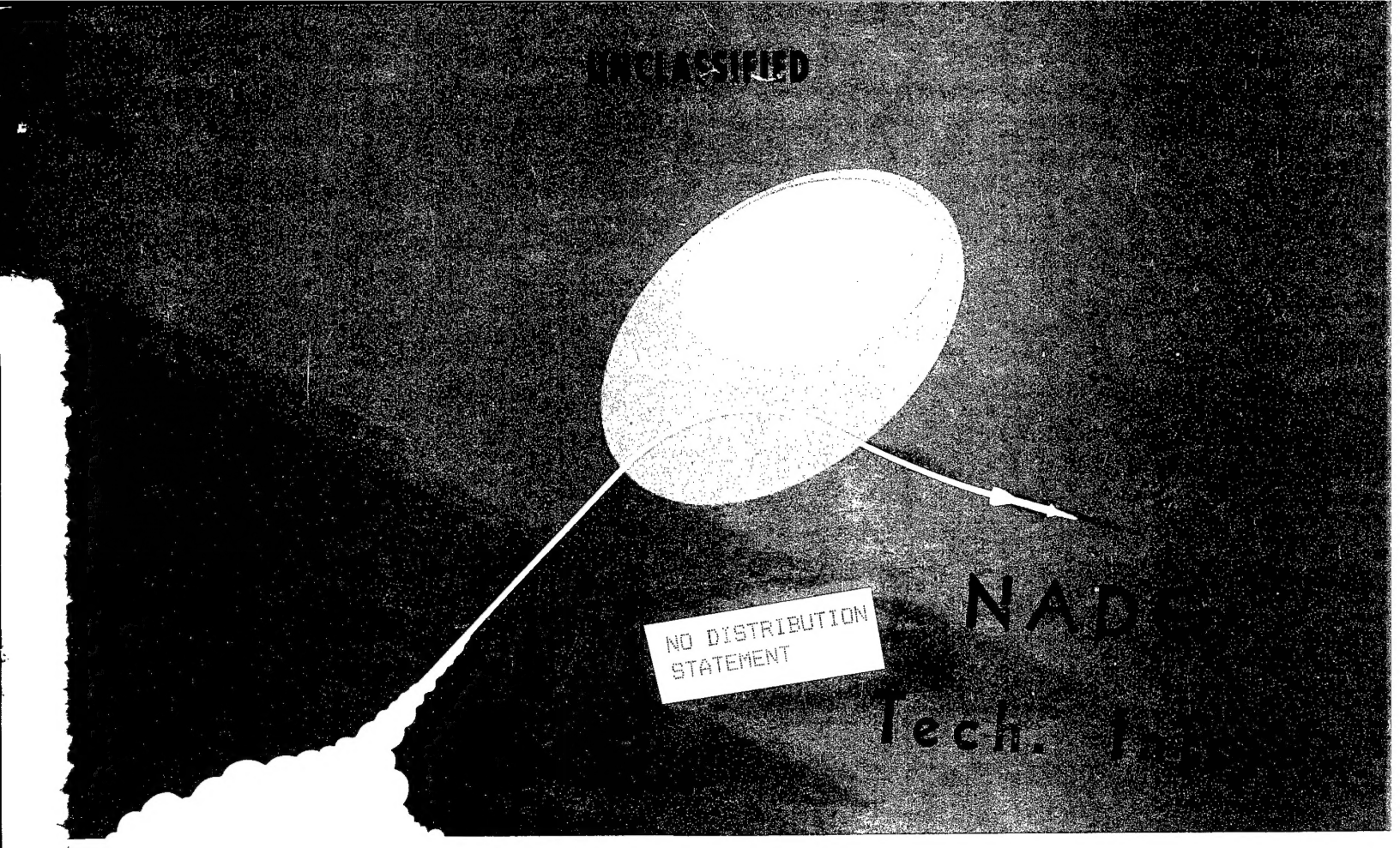

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APPENDIX 17

IEWS DATA TRANSFER (XFER)

FINAL SOFTWARE REPORT

DATA ITEM NO. A005

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INTEGRATED ELECTRONIC WARFARE SYSTEM
ADVANCED DEVELOPMENT MODEL (ADM)

800987-17

PREPARED FOR:

NAVAL AIR DEVELOPMENT CENTER
WARMINSTER, PENNSYLVANIA

CONTRACT N62269-75-C-0070

RAYTHEON
ELECTROMAGNETIC
SYSTEMS DIVISION

1 OCTOBER 1977

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APPENDIX 17

DATA TRANSFER SOFTWARE DESIGN SPECIFICATION

FINAL SOFTWARE REPORT

DATA ITEM A005

INTEGRATED ELECTRONIC WARFARE SYSTEM (IEWS)
ADVANCED DEVELOPMENT MODEL (ADM)

Contract No. N62269-75-C-0070

Prepared for:

Naval Air Development Center
Warminister, Pennsylvania

Prepared by:

RAYTHEON COMPANY
Electromagnetic Systems Division
6380 Hollister Avenue
Goleta, California 93017

1 OCTOBER 1977

RAYTHEON

RAYTHEON COMPANY
LEXINGTON, MASS. 02173

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SPEC NO. 53959-TC-0763

SHEET 1 OF

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TYPE OF SPEC

Computer Program Design Specification

TITLE OF SPEC

IEWS Special Test Equipment Data Transfer (XFER)

FUNCTION	APPROVED	DATE	FUNCTION	APPROVED	DATE
WRITER	T. Chernesky				

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1.0 Scope

1.1 Identification

This document specifies the detailed design requirements of XFER, a stand-alone non-operational software package for IEWS. XFER shall provide the STE with a memory dump or memory modify capability without requiring the IEWS operational software to be resident in IEWS. Communication to and from the STE shall follow the same protocol as that between the STE and the IEWS operational software.

1.2 Subprogram Tasks

XFER shall consist of five modules:

1) Resource management processor: XFRMP
2) Classification processor: XFCP
3) Analysis processor: XFAP
4) Techniques generator: XFTG
5) Signal sorter: XFSS

Each module shall have the capability of processing memory dump/modify requests destined for the host processor, and the capability of passing requests destined for slave processors to those slave processors.

2.0 Applicable Documents

The following documents, of the exact issue shown, form a part of this specification to the extent specified herein. In the event of conflict between the documents referenced herein and the contents of this specification, the contents of the Computer Program Design Specification for the Integrated Electronic Warfare System (IEWS) Advanced Development Model (ADM) Program shall be considered superseding requirements.

2.1 Computer Program Performance Specification

Computer Program Performance Specification for the Integrated Electronic Warfare System (IEWS) Advanced Development Model (ADM) Program (U), Raytheon Company, Electromagnetic Systems Division, (Number 061290529), (date 1 June 1976), (classification U).

2.2 Computer Program Design Specification

Computer Program Design Specification for the Integrated Electronic Warfare System (IEWS) Advanced Development Model (ADM) Program (U), Raytheon Company, Electromagnetic Systems Division, (Number 53959-GT-0750), (date TBD), (classification U).

2.3 Data Base Design Document

The Common Data Base Design Document, System Controller Unit, IEWS, ADM, document No. 53959-GR-0751, shall apply to this subprogram.

2.4 Miscellaneous Documents

The following documents shall apply to this subprogram.

Document No.	Document Title
53959-GR0756	Computer Subprogram Design Document, Executive, IEWS, ADM
WS-8506 Revision 1, 1 November 1971	Requirements for Digital Computer Program Documentation

3.0 Requirements

3.1 Subprogram Detailed Description

Each of the five XFER modules (XFRMP, XFCP, XFAP, XFTG, and XFSS) shall have a similar structure.

Each shall have two sections:

1) Initializer
2) Query

Each of the initializers shall:

1) Initialize (master clear) any slave processors
2) Clear all message flags of to-slave message buffers and from slave message buffers.
3) Newstart (put into run mode) any slave processors
4) Pass control to Query

Each of the Query sections shall poll the master and any slave processors for messages. If there is a message from the master, the XFER module shall determine if the message is destined for the host processor or a slave. If for a slave, the message shall be relayed to that slave. If not for a slave, then the message (a memory dump or memory modify) shall be processed locally. That is, local memory shall be modified, or an Executive message type 5 shall be generated (see CDBDD) as a response to the local memory dump request all messages from slaves shall be relayed to the master processor.

3.2 Subprogram Flow Diagram

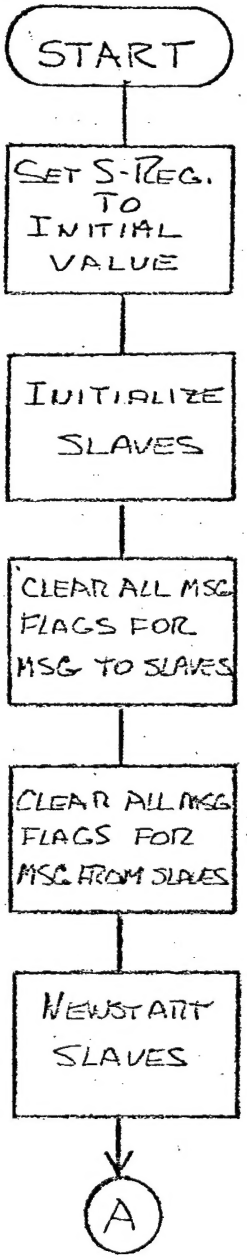
Figure 1 shows a flowchart which is applicable to each of the five XFER modules.

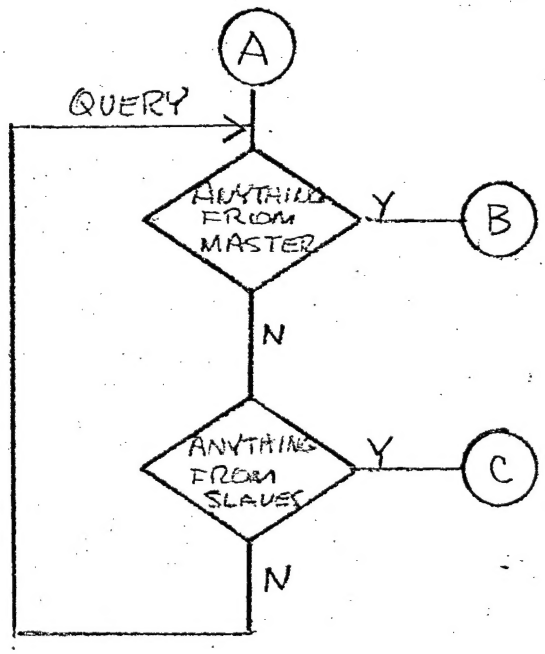
3.3 Computer Subprogram Environment

3.3.1 Tables

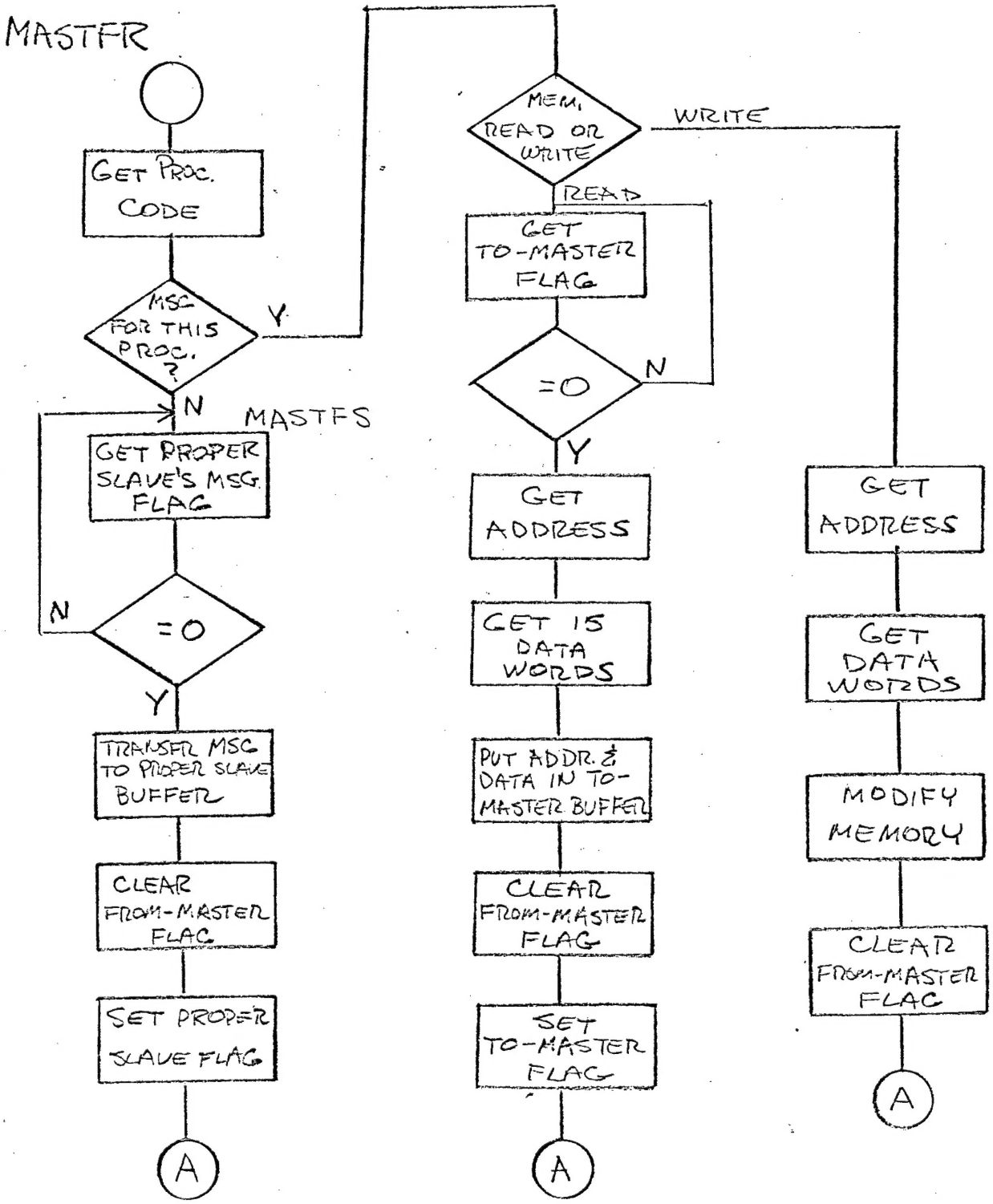
Each XFER module (with the exception of the RMP) shall have an input buffer and output buffer (IN BUFF and OUT BUFF, respectively)

XFRMP
XFCD
XFAD
XFSS
XFTG

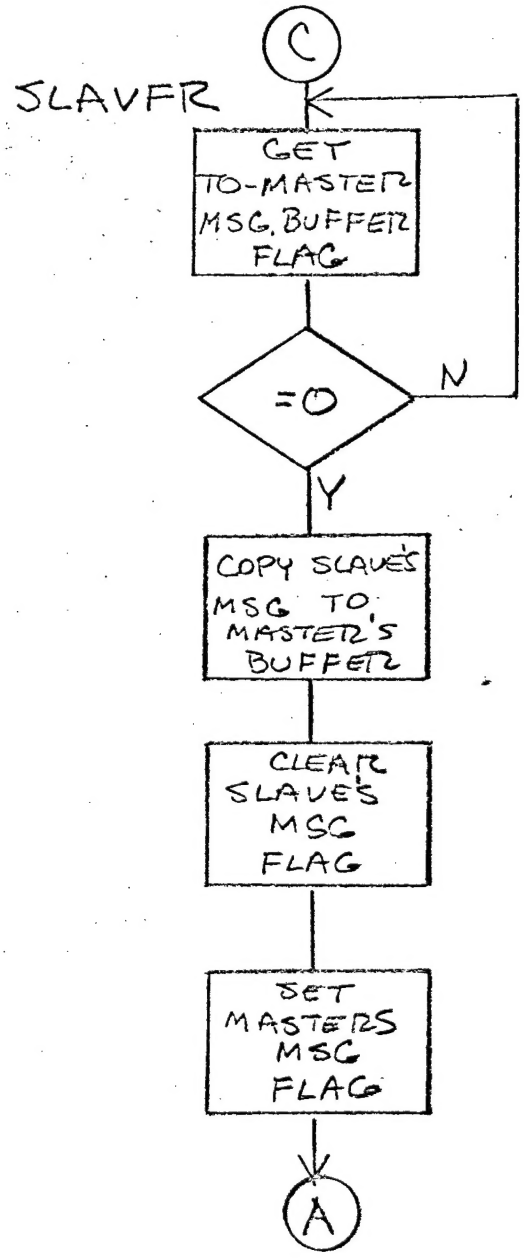




XFER (ALL MODULES)



XFER
(ALL MODULES)



XFER
(ALL MODULES)

3.3.1.1 IN BUFF

IN BUFF shall be used as the input message buffer for messages from the master IN BUFF shall be 25 16-bit words in length. Word Ø shall be a flag word (non-zero contents mean a message is present) Remaining words shall contain an Executive message type 27 or 28 (memory dump or memory modify, respectively).

3.3.1.2 OUT BUF

OUT BUF shall be used as the output message buffer for messages to the master OUT BUF shall be 25 16-bit words in length. Word Ø shall be a flag word (non-zero contents means a message is present). Remaining words shall be available for storage of an Executive message type 5 (memory dump response).

3.3.1.3 RMP XFER Input Buffer

The equivalent of IN BUFF in XFRMP shall be the STE - to - SC message buffer defined as 7004_{16} through 7017_{16}. The format of this message buffer shall be the same as IN BUFF (word 0 shall be a flag).

3.3.1.4 RMP XFER Output Buffer

Communication from the RMP to the STE shall utilize the circular buffer defined by the contents of the following locations:

7000_{16}	Address of next message to be read by the STE
7001_{16}	Address of next available word in buffer
7002_{16}	Address of lower memory bound buffer
7003_{16}	Address +1 of upper memory bound of buffer

The contents of these locations must be initialized by the STE program, SYSTEST. A copy of the IEWS operational software EXSTE subroutine shall be used to store data in the circular buffer.

3.3.2 Variables

None

3.3.3 Constants

None

3.3.4 Flags

None

3.3.5 Indices

None

3.3.6 Common Data Base References

None

3.4 Input/Output Formats

Xfer shall receive executive messages (type 27 and 28) from the STE and shall output executive messages (type 5) to the Message type 27 is a "read memory" message. Type 28 is a "write memory" message. Type 5 is a STE - destined data extraction message. The format of these message types is shown in the following figures.

3.5 Required System Library Subroutines

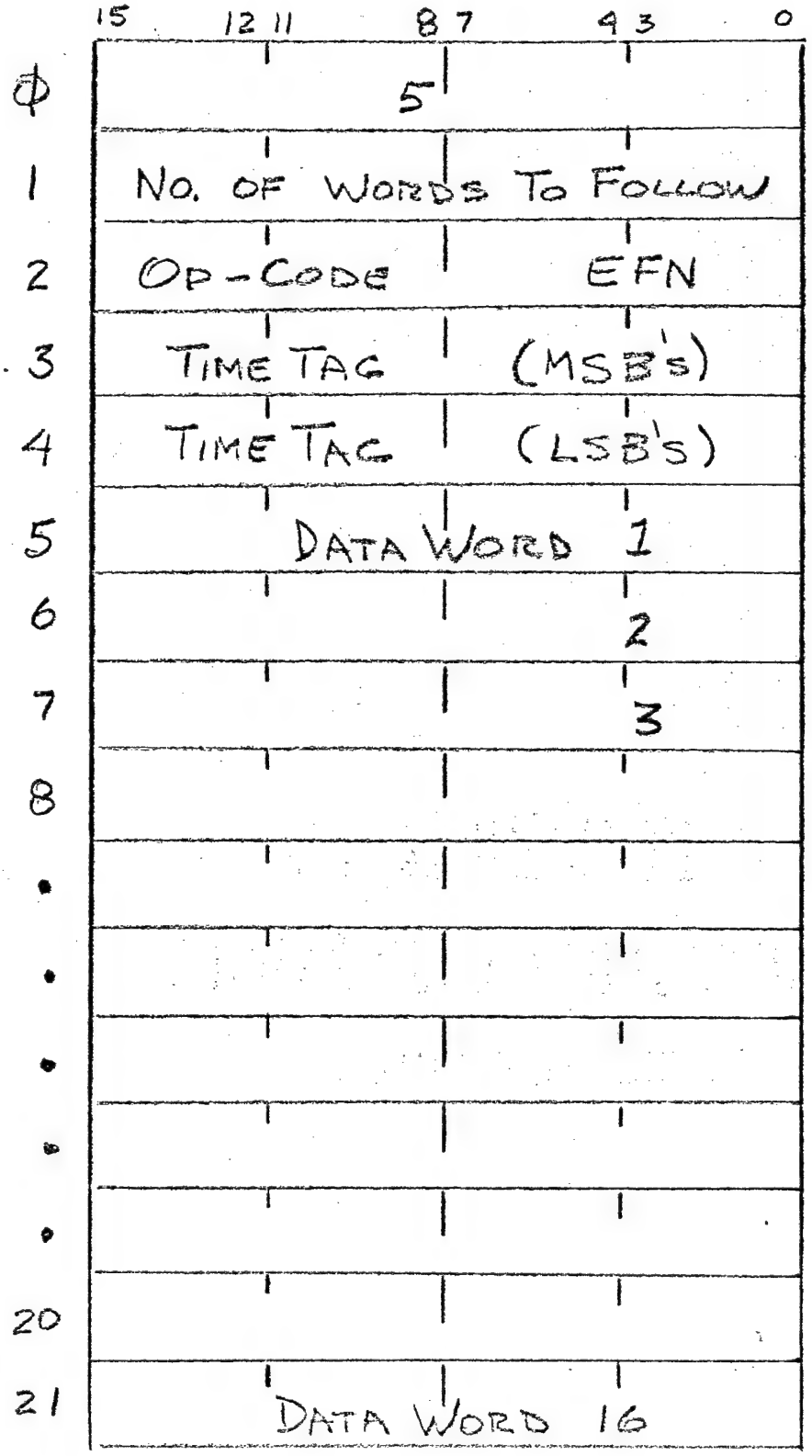
None

3.6 Conditions for Initiation

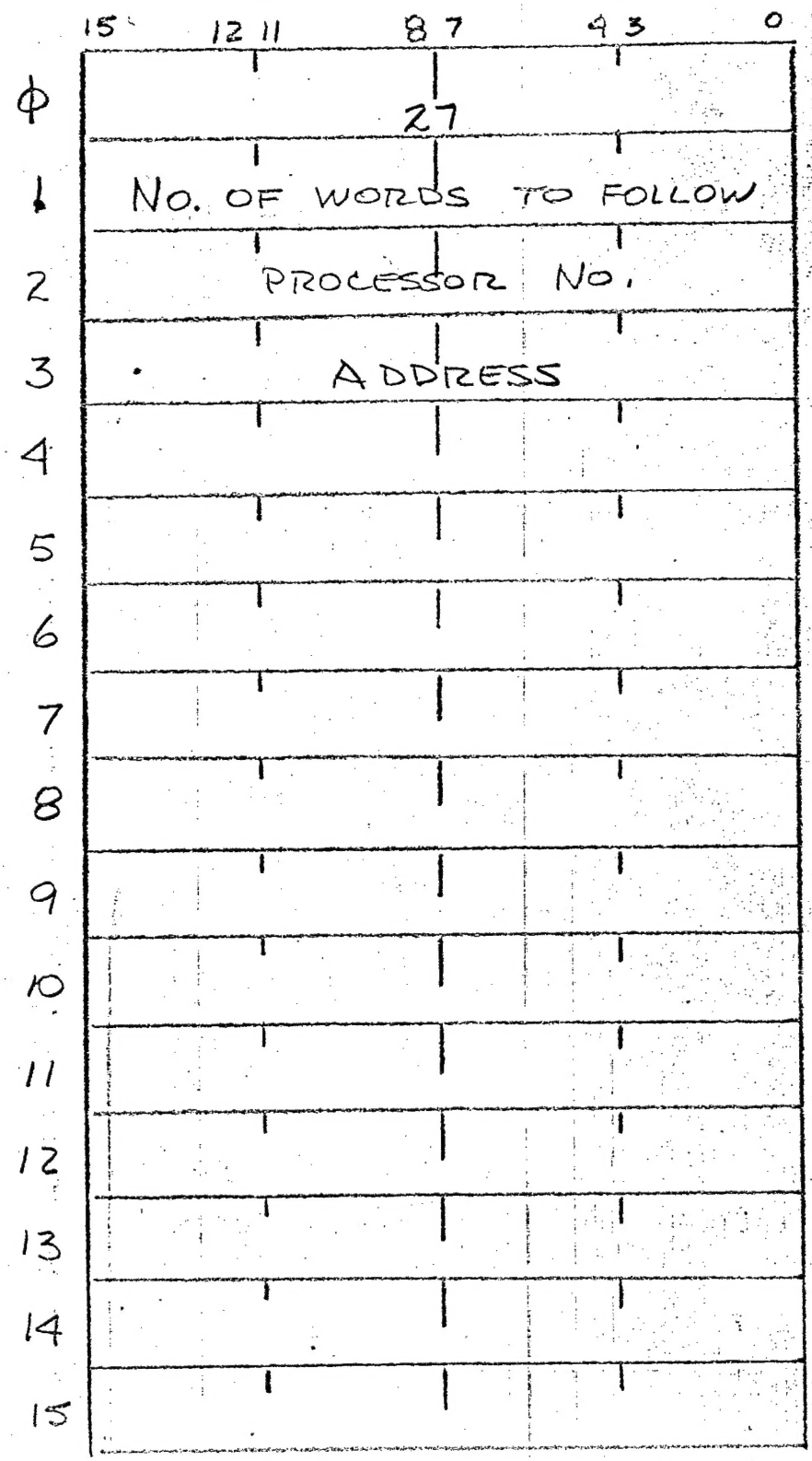
Unconditional

3.7 Subprogram Limitations

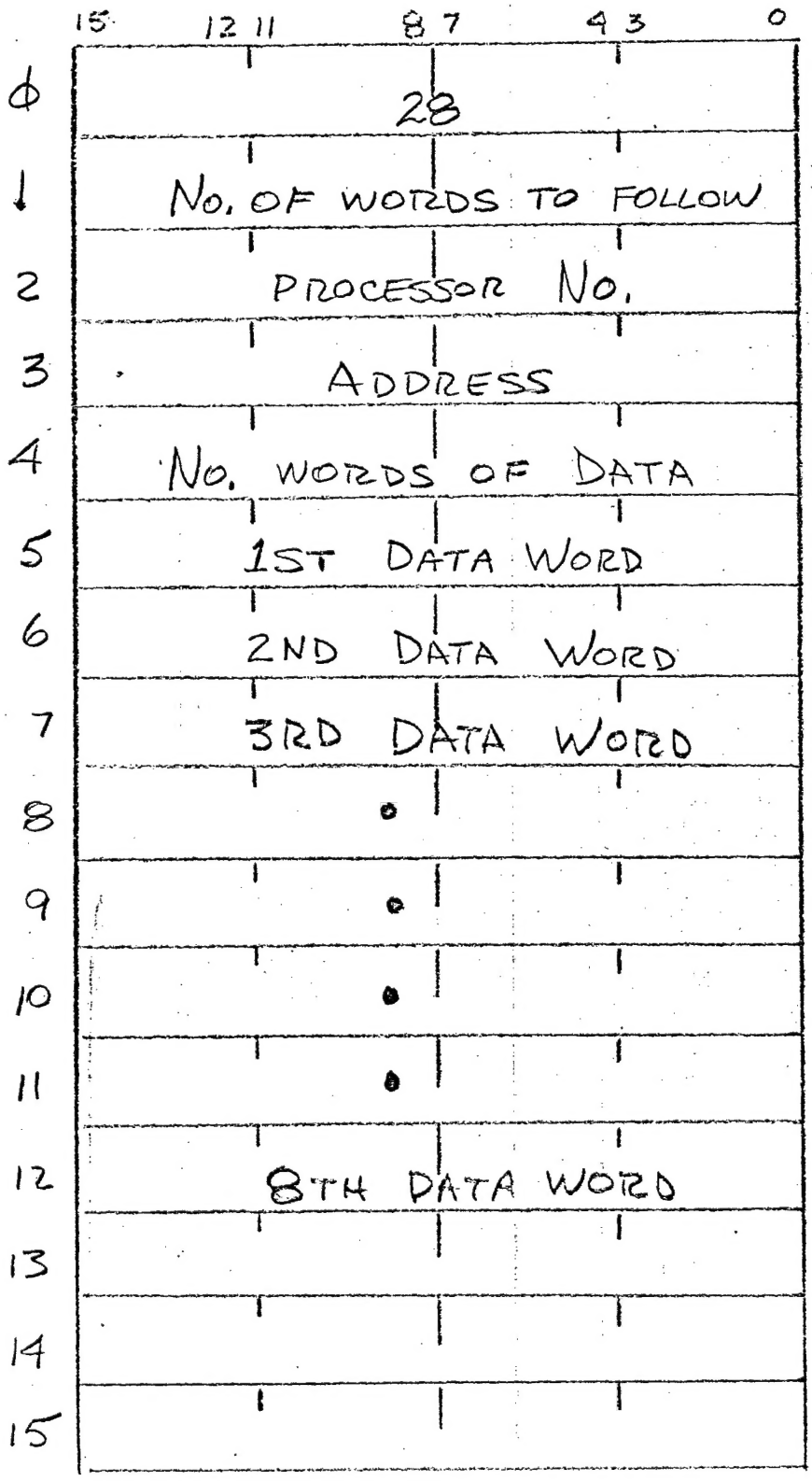
None



STE-Destined Data Extraction Message
(Exec. Message Type 5)



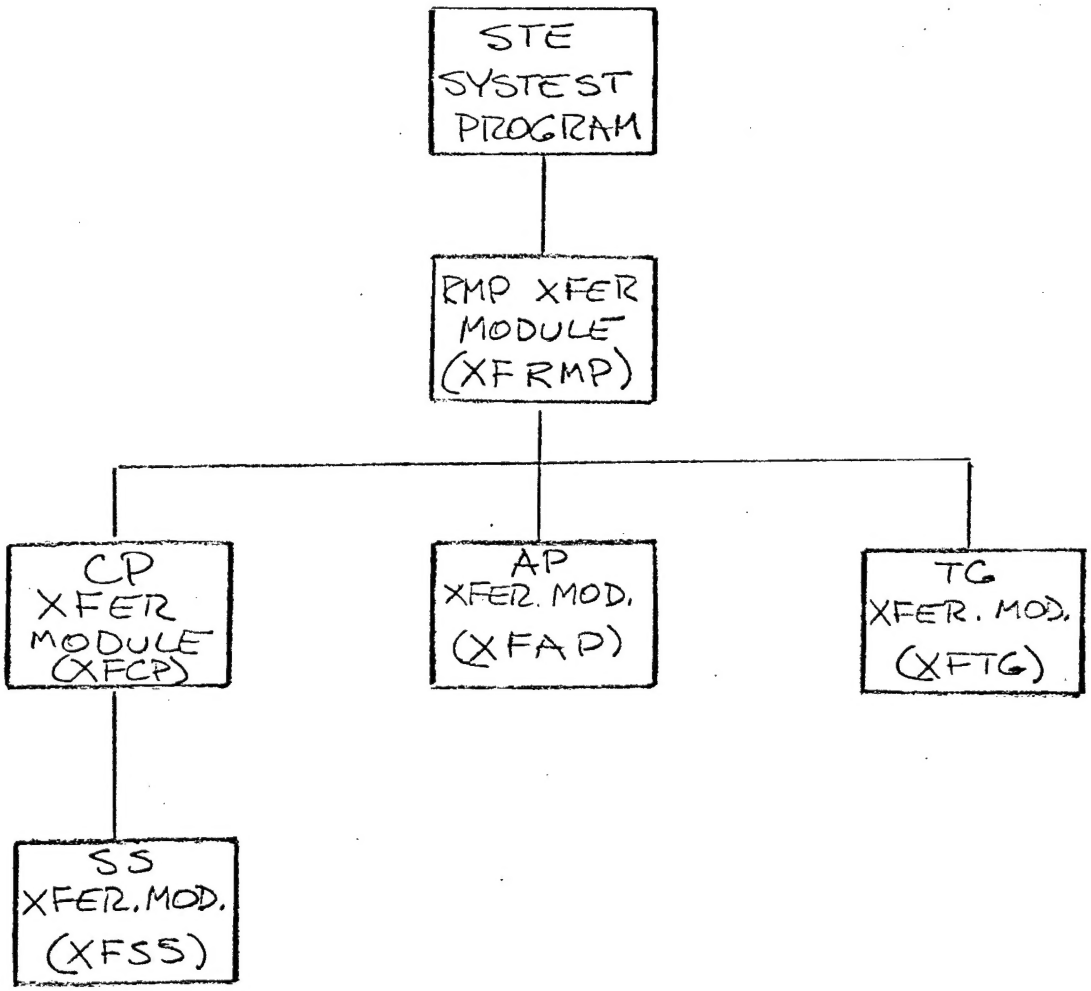
READ MEMORY MESSAGE FORMAT
(EXEC. MESSAGE TYPE 27)



WRITE MEMORY MESSAGE FORMAT
(EXEC. MSG. TYPE 28)

3.8 Interface Description

The following block diagram shows the relationship between the subprograms of the Xfer software module.



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XFER